

REMARKS

Claims 1 to 21 are presently pending herein. Claims 1, 15, 18 and 20 are presented in independent form. No claim has been amended in response to the Official Action dated May 11, 2007.

The indication of allowable subject matter in Claims 19 and 21 is acknowledged with appreciation.

The grounds of rejection in the Official Action dated May 11, 2007 includes the rejection of Claims 1 to 11, 13 to 18 and 20 under 35 USC § 103 as allegedly being obvious in view of the combination of O'Toole (i.e., U.S. Patent No. 5,889,856) and Cioffi (i.e., U.S. Patent 6,473,438). The Official Action also includes the rejection of Claim 12 under 35 USC § 103 as allegedly being obvious in view of the combination of O'Toole, Cioffi and Bremer (i.e., U.S. Patent No. 7,020,266).

Applicants respectfully submit that the aforementioned grounds of rejection are erroneous for at least the reasons provided below.

Evaluated under the controlling legal standards, the rejections of Claims 1 to 18 and 20 cannot be sustained.

Applicants' invention, as set forth in Claim 1, is directed to a line interface for coupling a twisted pair telephone line with a communications network. The line interface comprises a broadband analog front end circuit coupling the twisted pair telephone line with the line interface and a programmable filter coupled to receive an output signal from the broadband analog front end circuit and configured to filter frequency bands of the output signal into a plurality of separate, variable bandwidth transmission channels. The plurality of separate variable bandwidth transmission channels are associated with the communications network and the frequency bands

and the variable bandwidths are determined by programming the programmable filter.

O'Toole does not anticipate or render obvious Applicants' invention, as recited in Claim 1. For example, O'Toole does not teach or suggest a programmable filter as claimed. More specifically, O'Toole lacks any teaching of a programmable filter configured to filter frequency bands of the output signal into *a plurality of separate, variable bandwidth transmission channels*. O'Toole also fails to teach or suggest that the *variable bandwidths* are determined by programming the programmable filter. In fact, O'Toole lacks any teaching or suggestion of *variable bandwidth transmission channels*.

The Examiner concedes that O'Toole "does not disclose the limitation of configured to filter frequency bands of said output signal into a plurality of separate, variable bandwidth transmission channels." (See Official Action dated May 11, 2007, p. 3). In an attempt to supply this alleged deficiency, the Examiner erroneously relies upon Cioffi. Cioffi is directed to a method and apparatus for coordinating multi-point-to-point communications in a multi-tone data transmission system. Cioffi "relates generally to discrete multi-tone communication systems in which a central unit services a plurality of remote units. More specifically, it relates to methods for coordinating upstream communications from the remote units." (See Cioffi, col. 1, lines 15 to 19) Cioffi discloses a discrete multi-tone data transmission system having a multiplicity of discrete subchannels including an overhead bus. When a selected remote desires to initiate communications, it loops times its own clock with the clock of the central unit and then transmits a remote initiated synchronization signal to the central unit over a dedicated overhead subchannel or set of overhead subchannels in the overhead bus. The central unit responds with a centrally initiated synchronization signal that contains information indicative of a frame boundary phase

shift required to better synchronize the selected first remote unit with other remote units that are currently communicating with the central unit. The remote responds by shifting the phase of the frames it outputs as indicated by the centrally initiated synchronization signal. The synchronization may be done in either an iterative manner or as a single step. This synchronizes the frame boundaries of the frames outputted by the selected remote unit with frame boundaries of frames output by the other remote units that are currently communicating with the central unit. The synchronization is arranged to occur such that the frame boundaries from the various remotes substantially coincide when they are received at the central unit. (See Cioffi, col. 3, lines 16 to 39) Cioffi does not teach or suggest a programmable filter configured to filter frequency bands of the output signal into a plurality of separate, *variable* bandwidth transmission channels. Further, Cioffi fails to teach or suggest the claim requirement that the *variable bandwidths* are determined by programming the programmable filter. The Examiner relies upon col. 7, line 59 to 68 and col. 8, lines 1 to 5 of Cioffi. These passages of Cioffi read as follows:

A representative DMT transmission band is illustrated in FIG. 2. As seen therein, the transmission band includes a multiplicity of sub-channels 23 over which independent carrier signals (referred to as sub-carriers 27) may be transmitted. DMT transmission inherently partitions a transmission medium into a number of sub-channels 23 that each carry data independently. The data on each sub-channel 23 can correspond to a different signal or can be aggregated into higher data rates that represent a single or fewer wider bandwidth transmissions. These sub-channels 23 are implemented entirely with digital signal processing in DMT, which eliminates the need for analog separation filters and maximizes spectral efficiency. The number of sub-channels used may be widely varied in accordance with the needs of a particular system.

Notably, this passage does not even mention variable bandwidth transmission channels let alone a programmable filter that is configured to filter frequency bands of the output signal into a

plurality of separate, *variable* bandwidth transmission channels where the variable bandwidths are determined by programming the programmable filter. In fact, the following passage at col. 8, lines 9 to 14 clearly teach fixed sub-channels:

By way of example, in one embodiment that is adapted for use in a cable based subscriber system, 1024 sub-carriers 27 may be used *with each carrier confined to a 32 kHz sub-channel 23.*

This provides approximately 32 MHz of frequency bandwidth in which the remote units can communicate with the central unit 10.
(emphasis added)

Accordingly, Cioffi does not supply the admitted deficiencies of O'Toole. Hence, Applicants respectfully submit that Claim 1 is clearly patentable.

Claims 2 to 14 depend directly or indirectly from Claim 1 and, therefore are allowable for at least the reasons that Claim 1 is patentable. In addition, these claims recite limitations that further define Applicants' invention over the cited information. For example, Claim 12 further defines the interface line card to be configured such that an ADSL bandwidth is expanded to include the POTS bandwidth when the POTS usage signal indicates that the POTS bandwidth is not in use and the ADSL bandwidth is reduced to exclude the POTS bandwidth when the POTS usage signal indicates that the POTS bandwidth is in use. In alleging that Claim 12 is obvious the Examiner relies upon O'Toole, Cioffi and Bremer. The deficiencies of O'Toole and Cioffi are noted above. Bremer does not supply any of the noted deficiencies of O'Toole or Cioffi. Further, the Examiner's reliance on Bremer is misplaced as Bremer expressly teaches away from the claim invention. Specifically, Bremer teaches against the use of filters to avoid the disadvantages associated therewith. (See Bremer, col. 1, line 52 to col. 2, line 10 and col. 2, lines 31 to 33) As such, Bremer cannot be used in an obviousness type rejection of Claim 12.

Applicants' invention, as recited in Claim 15, is directed to a method of providing a plurality of services over a twisted pair telephone line, comprising the acts of: receiving a broadband analog signal from the twisted pair telephone line; filtering the broadband analog signal using a programmable filter into a plurality of separate bands wherein the plurality of separate bands are determined by programming the filter to generate a plurality of variable bandwidth channels; and transmitting the plurality of separate bands to a plurality of different service providers.

O'Toole does not teach or suggest Applicants' invention as recited in Claim 15. As explained in connection with Claim 1, O'Toole lacks any teaching of variable bandwidth channels. As noted above, Cioffi does not supply the material deficiencies of O'Toole. As such, Claim 15 is clearly patentable.

Claims 16 and 17 depend from Claim 15 and, therefore, are allowable for at least the reasons that Claim 15 is patentable. In addition, these claims further define Applicants' invention over the information of record.

Applicants' invention, as recited in Claim 18, is directed to a line interface for coupling a twisted pair telephone line with a communications network. The line interface includes a broadband analog front end circuit coupling the twisted pair telephone line with the line interface and a programmable filter coupled to receive an output signal from the broadband analog front end circuit and configured to filter frequency bands of the output signal into a plurality of different transmission channels. The plurality of different transmission channels include a first transmission channel having a first variable frequency bandwidth and a second transmission channel having a second variable frequency bandwidth wherein the programmable filter can be

programmed to adjust a band edge of either the first transmission channel or the second transmission channel to increase or decrease the first and second variable frequency bandwidths, respectively.

O'Toole does not teach or suggest Applicants' invention as recited in Claim 18. For example, O'Toole lacks any teaching or suggestion of a plurality of transmission channels including a first transmission channel having a first variable frequency bandwidth and a second transmission channel having a second variable frequency bandwidth wherein the programmable filter can adjust a band edge of either the first transmission channel or the second transmission channel to increase or decrease the first and second variable frequency bandwidths. Cioffi does not supply any of these deficiencies of O'Toole. Claim 18 is clearly patentable.

Applicants' invention, as recited in Claim 20, is directed to a method of providing a plurality of services over a twisted pair telephone line. The method includes the steps of: receiving a broadband analog signal from the twisted pair telephone line; filtering the broadband analog signal using a programmable filter into a plurality of separate frequency bands including a first transmission channel having a first variable frequency bandwidth and a second transmission channel having a second variable frequency bandwidth; programming the programmable filter to adjust a band edge of either the first transmission channel or the second transmission channel to increase or decrease the first and second variable frequency bandwidths, respectively; and, transmitting the first and second transmission channels to different service providers.

O'Toole fails to teach or suggest Applicants' invention, as recited in Claim 20. For example, O'Toole is completely devoid of any teaching or suggestion of the claimed steps of filtering the broadband analog signal using a programmable filter into a plurality of separate

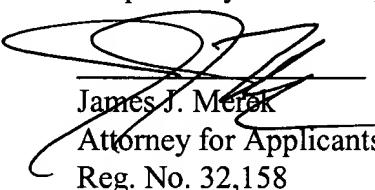
frequency bands including a first transmission channel having a first variable frequency bandwidth and a second transmission channel having a second variable frequency bandwidth and programming the programmable filter to adjust a band edge of either the first transmission channel or the second transmission channel to increase or decrease the first and second variable frequency bandwidths. Cioffi does not supply any of these deficiencies of O'Toole. Therefore, Claim 20 is clearly patentable.

All remaining claims (i.e., Claims 19 and 21) have been indicated to contain allowable subject matter.

It is believed that no additional fees are due. Should that determination be incorrect, however, the Patent Office Officials are further authorized to charge any deficiency to Deposit Account No. 50-0562 and notify the undersigned in due course.

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Respectfully submitted,


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